

Estimate the annual Chinook Salmon escapement in the Copper River using fishwheels and a mark-recapture experiment

Abstract

The purpose of this project was to use fishwheels and two-sample mark-recapture methods for long-term monitoring of Chinook salmon *Oncorhynchus tshawytscha* escapement on the Copper River. This report summarizes results from the 2004 field season, the fourth year since the project's inception. Objectives in 2004 were to: (1) estimate the annual, system-wide escapement of Chinook salmon to the Copper River using mark-recapture methods, such that the estimate was within 25% of the actual escapement 95% of the time; and (2) develop a long-term monitoring program operated by the Native Village of Eyak (NVE).

For the first sample event, two live-capture fish wheels were operated at Baird Canyon for 1,201 h from 22 May to 22 June. During this period, 2,763 adult Chinook salmon were captured and 2,515 fish were marked (2,017 spaghetti tags and 498 radio tags). For the second sample event, one fish wheel was operated near the lower end of Wood Canyon for 1,284 h from 28 May to 21 July. A total of 3,339 Chinook salmon were captured and 3,101 fish were examined, of which 185 were recaptures. The probability of a fish being marked at Baird Canyon and the probability of a marked fish being recaptured at Canyon Creek were not independent of time. Using a temporally stratified Darroch estimator, estimated abundance of Chinook salmon measuring 600 mm FL or greater that migrated upstream of Baird Canyon from 22 May to 22 June was 40,564 (SE = 4,650). The median travel time of Chinook salmon tagged at Baird Canyon and recaptured at Canyon Creek (~ 91 km upstream) was 9.0 d (range: 4-42 d).

With funding currently approved through 2006, this project has evolved into a successful and potentially long-term monitoring program that has made NVE an integral part of Copper River salmon research. The project has also demonstrated that Federal, State and Tribal agencies can work cooperatively to collect data on Copper River salmon stocks that are used to assess, and potentially improve, current management practices.

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